

Work Order ID 56504

Thursday, February 25, 2010 11:39:02 AM

Page 1

Item ID: D407-667-205

Accept

Setup Start

Revision ID:

Item Name: Crosstube Aft

Stop

Start Date: 2/26/2010 Start Qty: 1.00

Cust Item ID:

Required Date: 3/12/2010 Req'd Qty: 1.00

Customer:

Reference:

Approvals: Process Plan: MF 7

Date: 10-2-25 Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
----------	--------------

D407-667-245	Rev F
--------------	-------

100



DC

Document Control

DOCUMENT CONTROL



0.00

Memo

0.00

Photocopy bluefile and create labels as per PPP D407-667-205 CHG006

Siobhán

*PTO →
JG for BG 10/04/01*

110



Packaging

Packaging

Packaging

Memo

0.00

0.00



10-3-18

120



CNC Bend 1

CNC Delta 100 Bender

BENDING MACHINE - CROSSTUBES

Memo

0.00

0.00

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio FT



10-3-18

Dart Aerospace Ltd

W/O: 56504		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
10/04/05	# 100	Perm. change Go through and fix Ration numbers Attach copy of Bom as Ref.	<i>[Signature]</i>	10.04.07			<i>[Signature]</i> 10/04/05

Part No: D407-667-205 PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00



QC

Memo

0.00

Quality Control

P 10.03.18 / S 10/02/18 (4)

B56504 D407-667-205

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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Date:

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QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.

7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.

8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

9- Scribe tube to identify on the inner chamfer in the cuff D# and B#

10-Deburr & Inspect for surface damage. Repair damage within limits as per

MB
10-03-23

AWM 10-3-23

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
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NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Dwg D407-667-245

150



HandFXtube

Crosstubes Chemical Conversion

0.00

1 - - AUM
10-3.27

Memo

0.00

Hand Finishing Crosstubes

160



QC

QC3- Inspect Part Finish

0.00

8 10/10/24

Memo

0.00

Quality Control

170



QC

QC5- Inspect part completeness to step on W/O

0.00

8 10/10/24

Memo

0.00

Quality Control

70

d

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180 	Outsource process - NDT per QSI038 4.1	0.00							
Outsource2	Memo	0.00							
Outsource process - NDT	Liquid Penetrant Inspection as per QSI 0380 Issue P/O: <u>11550</u> LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order								<u>CY</u> <u>10/3/24</u> <u>(1)</u>
190 	Packaging	0.00							
Packaging	Memo	0.00							
Packaging	Ensure copy of NDT results attached to work order.								<u>P</u> <u>10/3/24</u> <u>(1)</u>
200 	QC5- Inspect part completeness to step on W/O	0.00							
QC	Memo	0.00							
Quality Control									<u>ml</u> <u>10</u> <u>03</u> <u>29</u> <u>(1)</u>

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Reference:

Run Start



Approvals: Process Plan: Date: Tooling: Date:

Stop



QC: Date: SPC (Y/N): Date:

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

0.00



SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 9:00

Finish Time: 10:00

PAINT:

Start Time: 2:00

Finish Time: 3:00

M 10 03 29 ①

220

0.00



QC14- Inspect Spray Paint

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

1 1008 30

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Run Start

Stop

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230

0.00



Crosstubes

Crosstubes

Memo

0.00

1-Install abrasion strips as per QSI 035 using DT8674. Install chafing shield as per Dwg D407-667-245. Note: (3) top holes should be facing up. → ML 10.03.31

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

3-Install support with magnobond and install clamps as per Dwg D407-667-245 using installation jig DT9025. Torque clamps to 80-100 in lb → ML 10.03.31
A/R Magnobond Batch: 112417
EXP: 01/2011

4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint. → ML 10.03.31

ml 10 03 30 ①

240

0.00



QC

QC5- Inspect part completeness to step on W/O

Memo

0.00

Quality Control

Sc 02/04/01

④

[illegible]

Thursday, February 25, 2010 11:39:02 AM

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Stop

[illegible][illegible]

Start Date: 2/26/2010 **Start Qty:** 1.00

Cust Item ID:

Required Date: 3/12/2010 **Req'd Qty:** 1.00

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

Customer:

Reference:

Run Start

[illegible]

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Insp. Stamp

0.00

[illegible]

Packaging

Memo

0.00

Packaging

0.00

[illegible]

QC

Memo

0.00

Quality Control

0.00

[REDACTED]

Packaging

Memo

0.00

Packaging

Identify and in kanban rack
Location:

NAU

Work Order ID 56504

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Page 9

Item ID: D407-667-205

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____

Tooling: _____ Date: _____

Run Start

QC: _____ Date: _____

SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/04/07 HJ
MF
10-4-7

Picklist Print

Thursday, February 25, 2010 11:39:01 AM

Work Order ID: 56504

Parent Item: D407-667-205

Parent Item Name: Crosstube Aft

Comments: IPP Rev:C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Date: 2/26/2010

Required Date: 3/12/2010

Start Qty: 1.00

Required Qty: 1.00

AN960JDS16 \$51.61750

AN960JDS16

Purchased No

100

Each

0.0000

18.0000

Washer

D2856-400

Manufactured No

230

f

256.5521

1.3558

Abraison Strip

M113706

10-4-1 SD

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST403

256.5520842

50593

141.312084

52563

115.24

D2873-043

Manufactured No

230

Each

37.0000

2.0000

Nut Plate Assembly

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

37

45370

2

45422

1

50871

14

53966

20

M 10.03.31

M 10.03.31

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

D2873-045

Manufactured No

230 Each

55.0000 2.0000



Nut Plate Assembly

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

55

45210

3

50001

12

53967

20

53968

20

ml 10-03-31

D2894-1

Manufactured No

230 Each

27.0000 1.0000



2.750 Support

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

27

43713

8

43881

18

45483

1

ml 10-03-30

Thursday, February 25, 2010 11:39:01 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
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IPP Rev: D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

D3190-1

Manufactured No

230

Each

26.0000

2.0000



Chafing Shield

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

26

40109

6

47456

20

ml 10.03.31

D407-667-205TRN

Manufactured No

230

Each

2.0000

1.0000



Crosstube Turning Detail

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

LG

2

55833

1

55834

1

10-3-18

MS20601-AD4W8

Purchased No

230

Each

330.0000

14.0000



RIVET

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

330

108521

200

112203

130

ml 10.03.31

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Shop Packet Print

Page 3

Dart Aerospace Ltd

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JLM

Start Qty: 1.00

Required Qty: 1.00

MS21920-22

Purchased

No

230

Each

54.0000

4.0000



Clamp(per MIL-DTL-8783C)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

54

109495

6

110260

2

111210

46

W 10-03-31

AN5-10A

Purchased

No

260

Each

82.0000

10.0000



Bolt

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

82

107013

8

110363

2

112314

1

113149

1

113524

70

①
M114056 10-4-13

9

W/O:		WORK ORDER CHANGES					
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JLM

Start Qty: 1.00

Required Qty: 1.00

AN5-32A

Purchased

No

260

Each

152.0000

4.0000



Bolt



10-4-1 SP

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

152

106242

3

106519

4

110363

17

112933

28

113121

100

4

AN5-34A

Purchased

No

260

Each

138.0000

4.0000



Bolt



10-4-1 SP

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

138

104679

2

107013

2

113149

84

113226

50

4

Thursday, February 25, 2010 11:39:01 AM

Shop Packet Print

Page 5

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Thursday, February 25, 2010 11:39:01 AM

Page 6

Work Order ID: 56504



Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 2/26/2010

Required Date: 3/12/2010

Comments: IPP Rev:C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

260

Each

415.0000

4.0000



Nut



10-4-1' SP

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

ST

414

110382

10

111636

1

112314

16

113523

187

113537

200

Main Warehouse

ST139

1

112314

1

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Thursday, February 25, 2010 11:39:01 AM

Page 7

Work Order ID: 56504



Parent Item: D407-667-205



Parent Item Name: Crosstube Aft

Start Date: 2/26/2010

Required Date: 3/12/2010

Comments: IPP Rev:C05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:D Added Magnobond, Rubber Cushion & Clamps 07-02-19
JLM

Start Qty: 1.00

Required Qty: 1.00

MS21920-25

Purchased

No

260

Each

176.0000 2.0000



Clamp(per MIL-DTL-8783C)

Warehouse

Loc Qty

Loc Code

Location

Main Warehouse

CA

25

113744

25

Main Warehouse

ST

151

107456

2

108111

3

108975

17

109181

42

109644

10

111429

1

112495

1

113281

25

113282

50

M 10-03-30

Rubber Cushion's
D3595-063-450 B# 52447^{x2} ml 10-03-30*

Thursday, February 25, 2010 11:39:01 AM

Shop Packet Print

Page 7

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

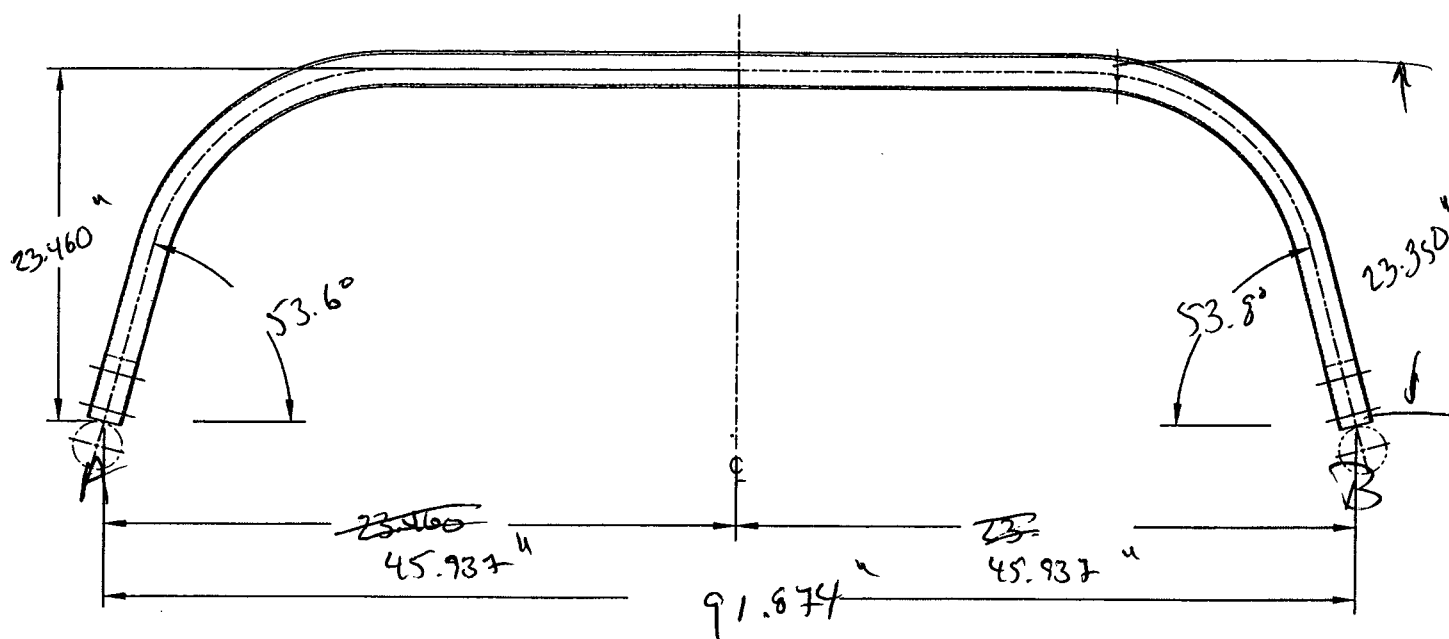
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	56504
Description: Crosstube High Aft (407)		Part Number:	D407-667-205
Inspection Dwg: D407-667-245 Rev: F		Page 1 of 1	

Required Dimension	Min	Max
Height	23.46	23.58
1/2 Span	45.86	45.98
Angle	54	56
Total Span	91.72	91.96



Comments
ANGLES ARE LOW. ONE HEIGHT IS LOW. Acceptable P 10.03.18

QC15 Inspection	8
Date	10/03/18

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.06.22	Dwg Rev updated	KJ	

Item	QTY -245	PART NUMBER	DESCRIPTION
1	X	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
2	1	D6011-115	CROSSTUBE
3	2	D2856-400-773	ABRASION STRIP
4	2	D2873-043	NUT PLATE
5	2	D2873-045	NUT PLATE
6	1	D2894-1	SUPPORT
7	2	D3190-1	CHAFING SHIELD
8	2	D3595-063-430	RUBBER CUSHION
9	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
10	4	MS21920-22	CLAMP
11	2	MS21920-25	CLAMP (OR MS21920-24)
12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

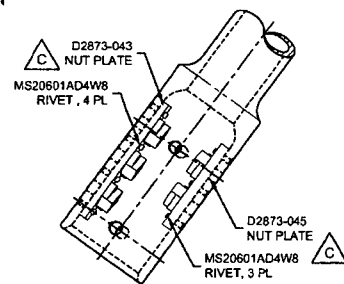
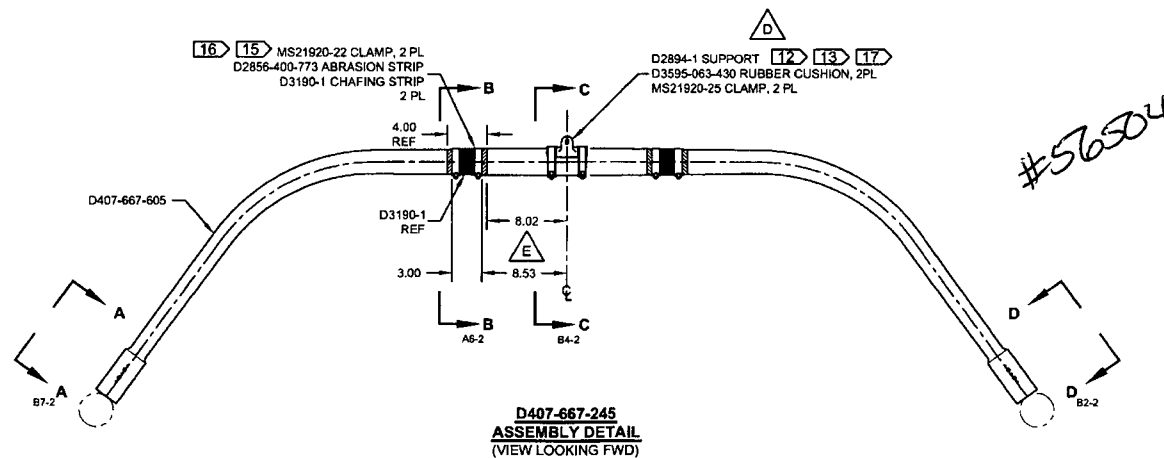
GENERAL NOTES:

- MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-245" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 27.7 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- TORQUE CLAMPS 80 TO 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

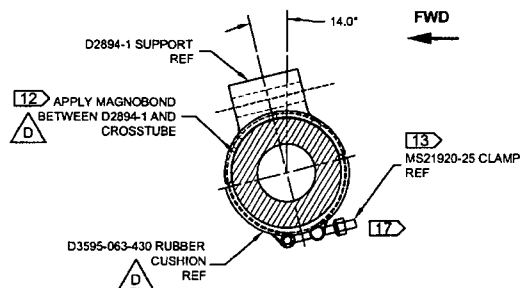
576504

RELEASED
08/11/12 N/A

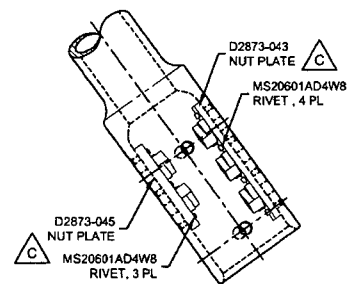
F	REFORMAT NOTES TO NEW STANDARDS (ZN B8-1); RELOCATED FLAG # 6 (ZN A8-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3)	RF	08.11.06
E	8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR#08-21 AND ECN#1225	MB	08.07.24
D	ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION	PH	07.02.07
C	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	05.07.26
B	ADD CHAFING SHIELD	CP	03.05.21
A	NEW ISSUE	CP	02.05.13
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. F
CHECKED	RF	D407-667-245	SHEET 1 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE ASSY (407 HIGH AFT)	NTS
DE APPR.	RF	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	08.11.06		



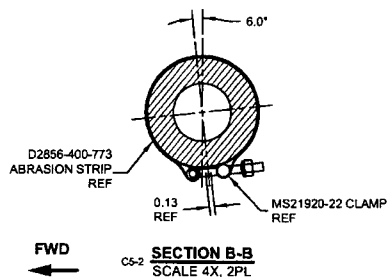
C7-2 VIEW A-A CUFF DETAIL
SCALE 4X



C4-2 SECTION C-C
SCALE 4X



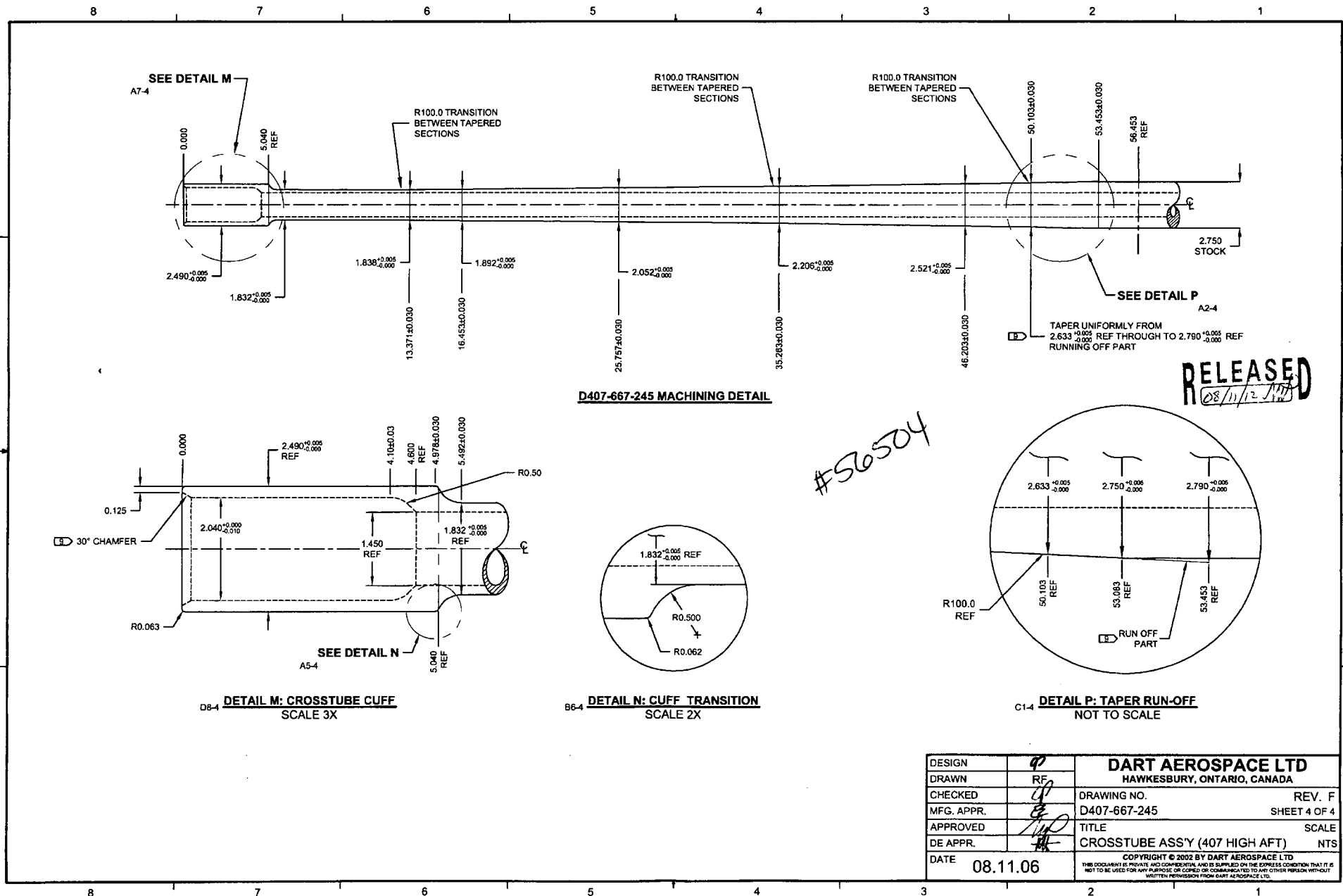
C2-2 VIEW D-D CUFF DETAIL
SCALE 4X



C5-2 SECTION B-B
SCALE 4X, 2PL

RELEASED
08/11/06

DESIGN	40	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. F
CHECKED	40	D407-667-245	SHEET 2 OF 4
MFG. APPR.	40	TITLE	SCALE
APPROVED	40	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
DE APPR.	40	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	08.11.06		





LIQUID PENETRANT TEST REPORT

P- 1532

CLIENT

DART AEROSPACE

DATE

March 26-2010

PAGE 1 OF

ATTENTION

LINDA/CHARTEL

ACUREN JOB NO.

188-10-0715

TIME AM ☒ P

ADDRESS

1270 ABELDEN ST.
HAWKES BURY ON, KGH 1KT

PO/WO No.

11550

WORK LOCATION

SHOP

PROJECT

F. P. I. ON CROSS TUBES

ACCEPTANCE STD.

ASTM 1417

REV./DATE

200

ITEM(S) EXAMINED

6 PCS

JOB DESCRIPTION

PROCEDURE No. LT-0007 REV./DATE

TECHNIQUE No. LT-1412 REV./DATE

PART NO.

SCOPE

WET FLUORESCENT LIQUID PENETRANT INSPECTION
CARRIED OUT 100% EXTERNAL**TEST DETAILS**

METHOD

☒ FLUORESCENT☐ VISIBLE

FAMILY BRAND

MAGNAFLUX

PENETRANT

2LG7

MINIMUM DWELL TIME

450

MIN.

PENETRANT REMOVER

H2O

MINIMUM DRY TIME

>10

MIN.

DEVELOPER

SKD 52

MINIMUM DWELL TIME

10

MIN.

DEVELOPER TYPE

☒ NON AQUEOUS☐ AQUEOUS☐ DRY☒ WATER WASH☐ SOLVENT REMOVABLE☐ POST EMUL

BLACK LIGHT S/N 16459

☐ OUTPUT > 1000 μ W/cm²☐ AMBIENT <LIGHTING EQUIP. ☐ FLASHLIGHT☐ TROUBLELIGHT☐ OUTPUT > 100 fc @ SL

OTHER

LABINO

LIGHT METER S/N

1098866

CAL DUE DATE

MAY-7-2011

TEST SURFACE

SURFACE CONDITION

☐ AS GROUND☐ AS WELDED☒ MACHINED☐ SHOT BLASTED☐ CLEAN BARE METAL

SURFACE TEMPERATURE

☐ < -4°C/ 20°F☐ -4°C/ 20°F TO 10°C/50°F☒ 10°C/50°F TO 52°C/125°F☐ > 52°C/125°F**RESULTS-**☐ METRIC ☐ IMPERIAL

1 CROSS TUBE, W.O. 56473 ✓

1 CROSS TUBE, W.O. 56475 ✓

1 CROSS TUBE, W.O. 56504 ✓

1 CROSS TUBE, W.O. 56505 ✓

1 CROSS TUBE, W.O. 56799 ✓

1 CROSS TUBE, W.O. 56800 ✓

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly intended that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE

Matthew Munsch

TECHNICIAN (SIGNATURE):

Mike Johnston

NAME (PRINT):

Mike Johnston

CGSB LEVEL

2

SNT LEVEL

CGSB REG. NO

0606

SIGNATURE

Matthew Munsch

2nd TECHNICIAN

CGSB LEVEL

SNT LEVEL

CGSB REG. NO

DTR # E-27370

REPORT

REVIEWED BY:

NAME

INITIALS

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

D407-667-205 Bom.

Status	Item ID	Rev	Name	Start Date	Quantity	Pe	UOM	Scrap %	Route Seq	IC	Sort	Comments	Date Last Mod	Add Date
✓	D407-667-205TRN		Crosstube Turning Detail	05/12/2009	1.0000		Each	0 %	110		0		07/04/2010 1:26 PM	05/12/2...
✓	AN960JD516		Washer	01/01/2008	18.0000		Each	0 %	230		0		07/04/2010 1:26 PM	05/12/2...
✓	MS21920-25		Clamp(per MIL-DTL-8783C)	01/01/2008	2.0000		Each	0 %	230		0		07/04/2010 1:26 PM	05/12/2...
✓	D3190-1		Chafing Shield	05/12/2009	2.0000		Each	0 %	230		0		05/12/2009 8:26 PM	05/12/2...
✓	D2856-400		Abraison Strip	05/12/2009	1.2880	f		5 %	230		0		05/12/2009 8:23 PM	05/12/2...
✓	D2873-045		Nut Plate Assembly	05/12/2009	2.0000		Each	0 %	230		0		05/12/2009 8:23 PM	05/12/2...
✓	D3595-063-450		RUBBER CUSHION	07/04/2010	2.0000		Each	0 %	230		0		07/04/2010 1:37 PM	07/04/2...
✓	MS21920-22		Clamp(per MIL-DTL-8783C)	01/01/2008	4.0000		Each	0 %	230		0		05/12/2009 7:15 PM	05/12/2...
✓	D2873-043		Nut Plate Assembly	05/12/2009	2.0000		Each	0 %	230		0		05/12/2009 8:23 PM	05/12/2...
✓	MS20601-AD4W8		RIVET	01/01/2008	14.0000		Each	0 %	230		0		05/12/2009 7:15 PM	05/12/2...
✓	D2894-1		2.750 Support	05/12/2009	1.0000		Each	0 %	230		0		05/12/2009 8:23 PM	05/12/2...
✓	AN5-32A		Bolt	01/01/2008	4.0000		Each	0 %	260		0		05/12/2009 7:15 PM	05/12/2...
✓	AN5-34A		Bolt	01/01/2008	4.0000		Each	0 %	260		0		05/12/2009 7:15 PM	05/12/2...
✓	AN5-10A		Bolt	01/01/2008	10.0000		Each	0 %	260		0		05/12/2009 7:15 PM	05/12/2...
✓	MS21042L5		Nut	01/01/2008	4.0000		Each	0 %	260		0		05/12/2009 7:15 PM	05/12/2...

Value stream mapping

- Value stream mapping is **the best way to identify where the high payoff** opportunities are, yet value stream mapping is the lean tool most likely to **not be used by** companies doing pretend lean!